

Title (en)

Urea granulation process with an acidic scrubbing system and the subsequent integration of ammonium salt into urea granules

Title (de)

Harnstoffgranulationsverfahren mit saurem Scrubbing-System und die anschließende Integration von Ammoniaksalz in Harnstoffgranulate

Title (fr)

Processus de granulation d'urée avec un système d'épuration acide et intégration successive de sel d'ammonium dans des granules d'urée

Publication

EP 2192099 A1 20100602 (EN)

Application

EP 08020708 A 20081128

Priority

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Abstract (en)

Urea granulation process with scrubbing system for removal of dust and ammonia from the off-gas of a urea granulation unit comprising a urea granulator, a granulator scrubber dust stage, a granulator scrubber acid stage, product coolers, a product cooler scrubber dust stage an evaporation unit and a condenser unit. Thereby urea melt and a concentrated liquor stream, containing urea and ammonium salt, are conveyed into the urea granulator, a first stream of fresh air, running through a first sequence of process steps, is send into the urea granulator, whereby dust- and ammonia-laden air is drawn off from the granulator and conveyed into a granulator scrubber dust stage, followed by a granulator scrubber acid stage, in which stage the ammonia-laden air being contacted with an acid in liquid phase and ammonia being scrubbed from that air by the generation of an ammonium salt. A second stream of fresh air, running through a second sequence of process steps, is used for cooling the product drawn off from the urea granulator, whereby said cooling is performed in product coolers, said air is heated up, and afterwards is conveyed to a product cooler scrubber dust stage. The clean off-gas drawn off from the granulator scrubber acid stage, included in the first sequence of process steps and the off-gas drawn off from the product cooler scrubber dust stage, included in the second sequence of process steps is released into the atmosphere. The ammonium salt solution stream from the granulator scrubber acid stage, included in the first sequence of process steps, is fed into said product cooler scrubber dust stage included in the second sequence of process steps, whereby ammonia of the dust-laden air stream exiting the product coolers, included in the second sequence of process steps, is removed, and thereafter it is send to the evaporation unit, where it is mixed with the liquor from the granulator scrubber dust stage or part of it, included in the first sequence of process steps. The vapour stream from the evaporation unit, which contains ammonia is given into the condenser, which releases a liquid process condensate. Said liquid process condensate is given into the granulator scrubber acid stage included in the first sequence of process steps. Finally, the concentrated liquor stream from the evaporation unit is fed into the urea granulator where the ammonium salt contained in the concentrated liquor stream being integrated into the granulated urea product.

IPC 8 full level

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CPC (source: EP US)

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Citation (applicant)

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